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Tetrahydrocurcumin potentially attenuates arsenic induced oxidative hepatic dysfunction in rats

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Abstract

Arsenic (As) compounds are reported as environmental toxicants and human carcinogens. Exposure to arsenic imposes a big health issue worldwide. Tetrahydrocurcumin (THC) is an antioxidative substance, which is derived from curcumin, the component of turmeric. In view of this fact, the purpose of this study was to delineate the ameliorative role of THC against arsenic-induced hepatotoxicity in rats. In this context, we evaluated the mode of action of chronic oral exposure of sodium arsenite as the source of arsenic at 5mg/kg/BW with tetrahydrocurcumin 80mg/kg/BW for 28 days. Hepatotoxicity was evaluated by the increased activities of serum hepatospecific enzymes namely aspartate transaminase, alanine transaminase, alkaline phosphatase, gamma glutamyl transferase, lactate dehydrogenase and total bilirubin along with increased elevation of lipid peroxidative markers, thiobarbituric acid reactive substances,lipid hydroperoxides, protein carbonyl content and conjugated dienes. The toxic effect of arsenic was also indicated by significantly decreased activities of membrane bound ATPases, enzymatic antioxidants like superoxide dismutase,catalase, glutathione peroxidase, glutathione-S-transferase, glutathione reductase and glucose-6-phosphate dehydrogenase along with nonenzymatic antioxidants like reduced glutathione, total sulfhydryl groups, vitamins C and E. Administration of THC exhibited a significant reversal of arsenic-induced toxicity in hepatic tissue. All these changes were supported by reduction of histopathological observations of the liver. These results suggest that THC has a potential protective effect over arsenic-induced hepatotoxicity in rat.

Biography

Muthumani.M doing Ph.D in Department of Zoology, Annamalai University, Annamalainagar-608002, and Tamilnadu, India. Now I am focussing in phytoderivative compounds against heavymetal induced toxicity in rats. Because now a day's heavymetal induced health problems in human beings is a major issue in world wide. Furthermore, I have published more than 9 papers in reputed journals and also member in various societies such as (United Kingdom Environmental Mutagen Society, Asia Pacific Chemical Biological and Environmental Engineering Society, European Society of Toxicology Invitro and International Water lily and Water Gardening Society).